

Phase II Fugitive Study  
Proposal Through Texas Council on Environmental Technology (TCET)  
titled

“Development of Emissions Factors and/or Correlation Equations for Gas Leak Detection, and the Development of an EPA Protocol for the Use of a Gas-imaging Device as an Alternative or Supplement to Current Leak Detection and Evaluation Methods”

Tasking Organization

This study is broken into 5 tasks.

1. Demonstrate the applicability of gas-imaging technology to other chemicals for detecting leaks.
2. Collect leak rate data for correlation equations.
3. Develop factors and/or correlation equations for ethylene/propylene.
4. Using an acceptable methodology, develop, demonstrate and test a CO<sub>2</sub> gas-imaging device system to estimate fugitive emissions from one or more specific chemical sources.
5. Develop an EPA protocol for the use of a gas-imaging device as an alternative or supplement to current leak detection and evaluation methods.

Participants

The contract is released through TCET. Environ with its subcontractor/team members ICF Consulting, URS Corporation, Gas-Imaging Systems, Innovative Environmental Solutions and Pacific Advanced Technology will be performing the effort over an approximate timeline of 10 months.

Summary of Effort

Tasks 1 and 4. Environ will continue its work with the Phase I CO<sub>2</sub> laser. But they will also evaluate the Sandia camera and the PAT Sherlock camera. The Sandia camera is also a back-scatter/absorption gas-imaging (BAGI) device, like the CO<sub>2</sub> laser. It is seeded by a Nd:YAG seed laser. The PAT Sherlock technology is referred to as Image Multi-Spectral Imaging (IMSS). In prototype testing, it demonstrated spectral signatures consisting of multiple species simultaneously. These tasks will be broken into Phase I - laboratory work, and Phase II - field demos/verification at a refinery/chemical site.

Tasks 2 and 3. The teams will use the bagging data from Phase I (HARC) study and supplement it with additional bagging data for the subsequent tasks. Using EPA protocols, the appropriate number of leak rate measurements and screening value pairs will be obtained to meet the EPA guidelines. The team will develop new correlation equations and/or factors specific to ethylene/propylene facilities.

Task 5. Acceptance of alternative work practices based on EPA approval are provide for in 40 CFR 60. Data from tasks 1 and 2, the HARC study, and other ongoing efforts will be used to develop an alternative protocol. A Monte Carlo simulation will be used to help evaluate the environmental benefit of alternative work plans to Method 21.